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# CACTUS AND SUCCULENT JOURNAL

**Of the Cactus And Succulent Society Of America**

VOL. VI. SEPTEMBER, 1934 No. 3

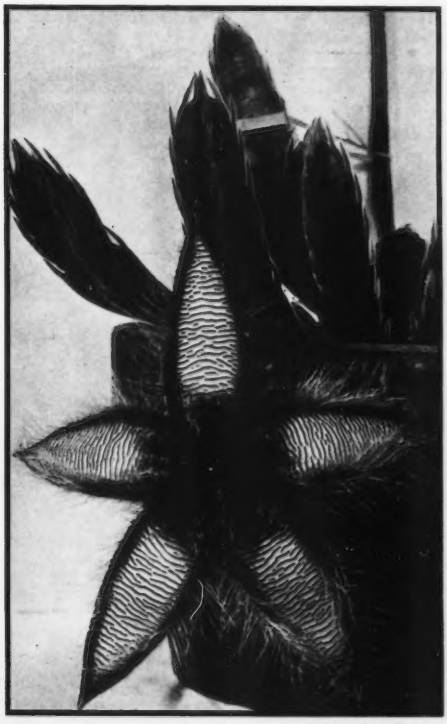
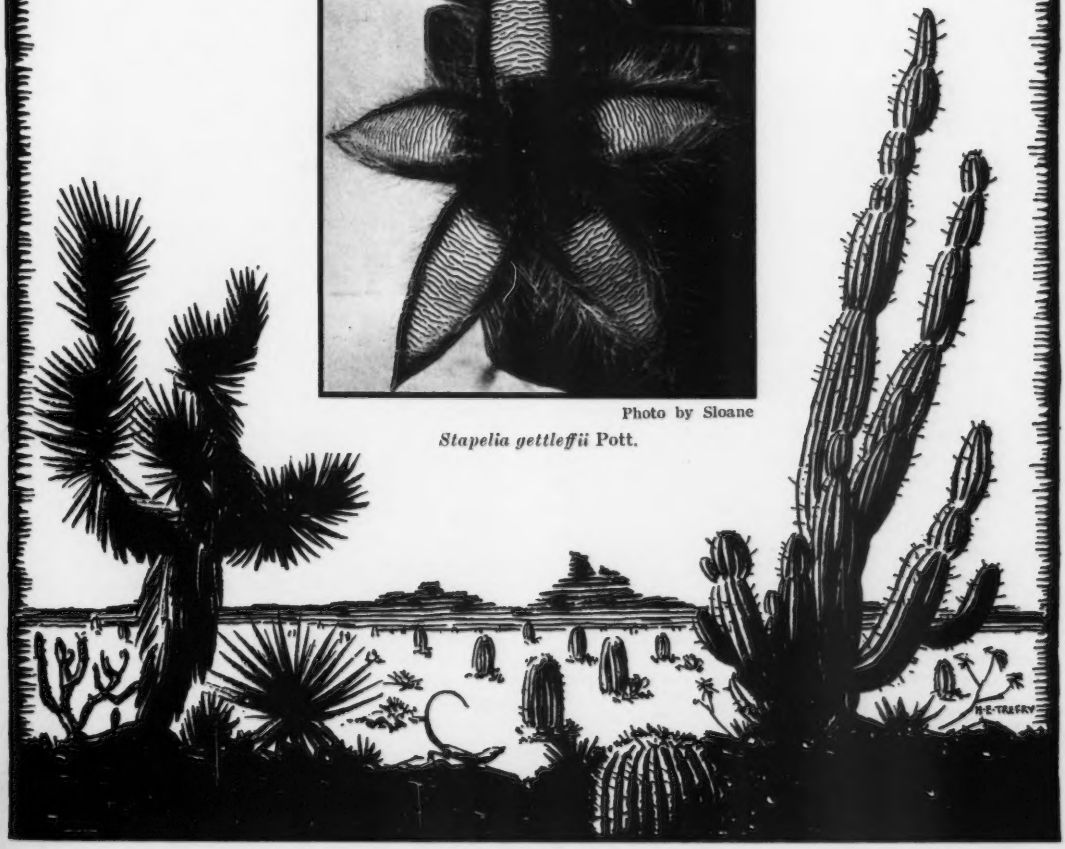


Photo by Sloane

*Stapelia gettleffii* Pott.



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# *Stapelia gettleffii* Pott.*

By ALAIN WHITE and BOYD L. SLOANE

*Stapelia gettleffii* Pott. We are presenting what we believe to be the photograph of *a flower, true to name, of the interesting plant* known as *Stapelia gettleffii*. Heretofore we have grown about half-a-dozen plants in our collection, each received from different sources under this name, but each in turn proving to be some hybrid or varietal form of *Stapelia hirsuta*. *In view of the confusion* which appears to exist regarding the species, we were therefore very pleased to receive our present plant from the Royal Botanic Garden, Kew, England.

*Stapelia gettleffii* is named for the discoverer, G. F. Gettleffi, who found the plant *in the Zoutpansberg district, northern Transvaal.* It appears to be limited in distribution to a small area in this section, 600 miles away from the habitat of its nearest relative, *Stapelia hirsuta.*

*The flowers greatly resemble those of S. hirsuta,* but are larger, proportionately with longer corolla-lobes, and the fringe of white or purple hairs is longer and very conspicuous. The most remarkable feature of the plant are the very long rudimentary leaves *which tip the rather inconspicuous teeth along* the angles of the stems. These leaves are unusually persistent on the younger stems, and cling to the sides of the stems in a very curious fashion. Once the habit of these little leaves has been carefully observed, it is quite *easy to identify the plant, even when it is not* in flower, and we trust the publication of our photograph will make it possible for collectors to decide readily if plants they may possess under this name are correctly labeled.

See photo on cover. Page 33

## LONG BEACH FLOWER SHOW

On September 28 and 29 the Long Beach Dahlia and Floral Society, Inc. will have their annual show which promises to surpass that of any previous year. Howard Gates and other Society members will exhibit succulents. *All Society members should attend* this show and watch Long Beach in its steady climb as one of the leading, if not the foremost, plantminded community in Southern California.

# *Pachycereus chrysomallus* flowering in the Huntington Botanic Gardens

*By* Wm. Hertrich

These two photographs show the top portion of the very interesting *Pachycereus chrysomallus*, for the first time in bloom at the Huntington Botanic Garden in San Marino, California. The plant has been in the possession of this Garden since 1913, having been sent at that time from its native habitat near Tehuacan, Mexico, as a small plant about thirty inches high.

*Pachycereus chrysomallus* flowering for first time in the Huntington Botanic Gardens. Photo taken at 8 a. m.

Several times, cold winter nights, accompanied by several degrees of frost, checked its growth, especially while the plant was small. Therefore, its height, which at this date is about eleven feet, should be considerably more if growth had not been interrupted. The plant at this date is in perfect health, decidedly more frost resistant than ten years ago, because of its height above ground and the added protection along the soft part of its terminal by the presence of considerable brownish wool.

Photo No. 1 depicts open flower taken at 8 a. m., August 26. At 10 a. m. the flower was still open. Photo No. 2 is the same flower taken the same date at 3 p. m.—a truly most interesting flower, the perianth-segments of which are deep shell pink on the outside and pinkish white on the inside. Until two days before the actual opening of the flower, the entire bud is covered with the same type of brownish wool adhering to the ter-

Photo by Wm. Hertrich

The *Pachycereus chrysomallus* flower photographed 7 hours later.

minal of the plant.

Like most all night blooming species, the opening and closing of the flower depends largely on weather conditions at the time of flowering. Clear warm nights, following warm days tend to open flowers soon after sunset, and again close them soon after sunrise, or occasionally even before. This, however, is not the case during cooler days, followed by foggy nights when the flowers open considerably later and stay open until 9, 10, and sometimes 11 a. m. the next morning if fog or cloudy weather persists during the forenoon.

For example, *Acanthocereus pentagonus* ordinarily is a strictly night blooming plant. To obtain a good photograph of open flowers without the aid of a flashlight is a rarety. However, several nights during the past month, this particular species stayed open during cool nights followed by foggy mornings long enough to allow good photographs to be taken at 9 a. m.

Returning to *Pachycereus chrysomallus*, the plant is a most interesting specimen, the ribs being of a glaucous gray, fading into a light green towards the grooves—indeed a very pleasing contrast. In its native habitat, this species of *Pachycereus* sometimes attain gigantic size—often fifty feet in height and branching in proportion.

Like with most *Pachycereus* and *Lemaireocereus*, native to Southern Mexico, the successful cultivator in Southern California and similar localities should select a fairly rich soil having plenty of drainage and some protection from extreme frost. Withhold water during the fall to harden the young growth. Having accomplished this, the reward in every case is very gratifying.

# Concerning Echinofossulocactus

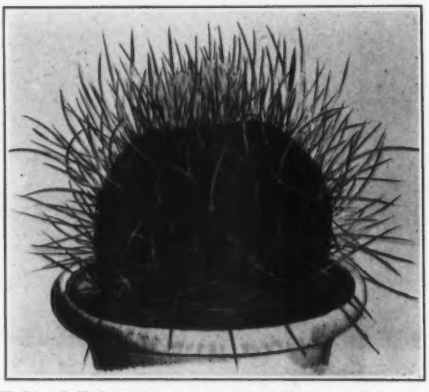
*By* Caroline Schmoll, Cadereyta, Qro., Mexico

We find in the seedling development of the entire group of *Echinofossulocactus* a characteristic phenomena that holds a surprise for the novice. Seedlings of this genus have all the appearance and promise of being Neomammillarias, but with the second year's development there occurs a uniform dividing of the body into ribs, while from the apex appears the first development of spines.

Thirty-five species at present are known to botany. (Britton and Rose recognized 22.) There is much similarity among these, but the same is found to be true in many other groups. We can readily identify certain of the family characteristics within this genus by the simple spines, as in *pentacanthus, wippermannii,* while among others are to be found the transition types, which can be identified from the 5 to 24 rim spines or spine edges.

Originally the flowers of the Echinofossulocactus were either white or red. But due to intermingling of various types and species, we have today a snowy white *E. albatus,* a cream-colored *E. vaupelianus,* while the new *E. gladiatus* var. *carneus* and *E. rectospinus* have a dark, almost carmine red flower, and it is from both the white and the red that we have the pale rose, the rose striped, the rose edged with white, or white striped, and so on in as many variations as we have varieties.

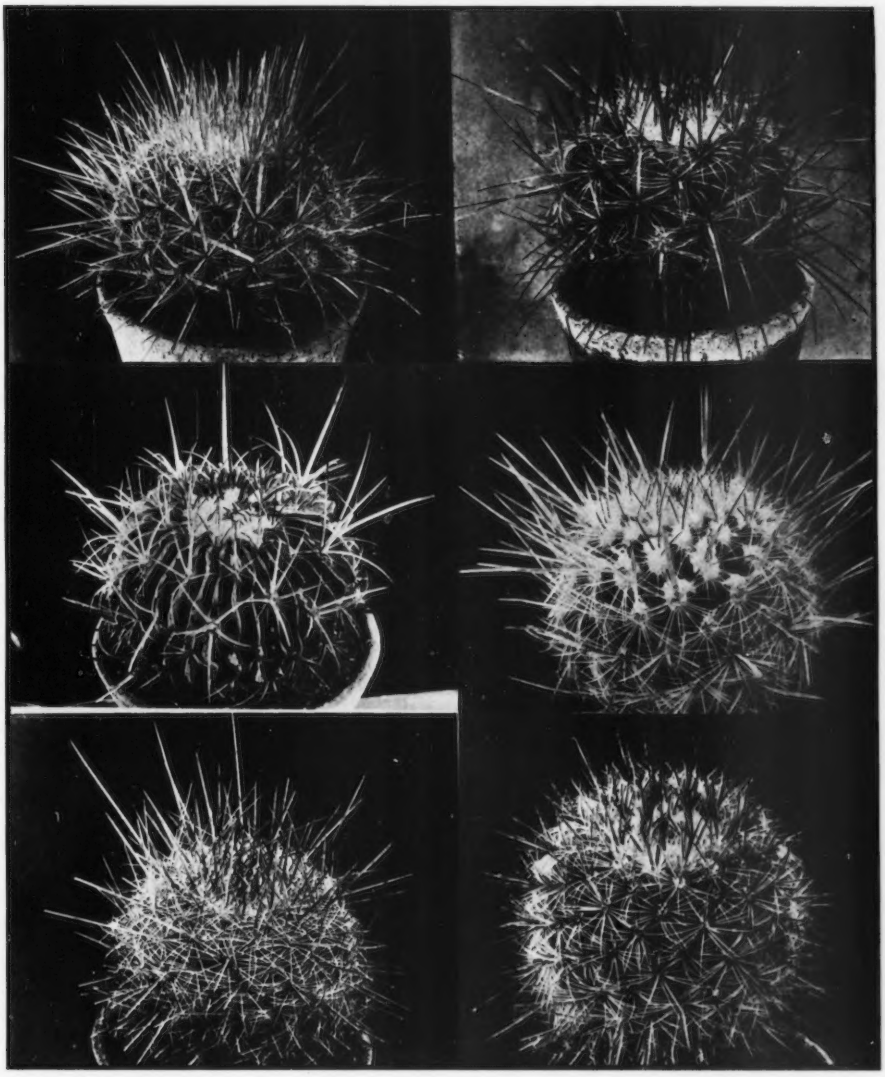
The cultural care is very simple. They grow best in a calcareous soil. We mix the soil in the following manner: One-third well rotted leafmold (not oak), one-third charcoal, chalk and ordinary soil mixed, and one-third



*Echinofollulocactus arrigens* as illustrated in Britton and Rose, Vol. III, page 113.

Vol. II, page 481 of the Journal shows illustrations of *Echiofossulocactus multicocactus, zacatecensis brevispinus, multicocactus coahuilensis, violaciflorus, crispatus, arrigens.*

sand. Before the cacti are planted in this mixture, boiling water must be poured over this earth twice for sterilization, then on the second day the plants may be planted in the wet soil. Protection from direct sun should be given the plants for a while.



Photographs from Ferdinand Schmoll

*Echinofossulocactus ochoterenaus*
*Echinofossulocactus gladiatus* var. *carneus*
*Echinofossulocactus densispinus*
*Echinofossulocactus parksianus*
*Echinofossulocactus rosasianus*
*Echinofossulocactus sphacelatus*

# Genus Lithops, Part II

*By* F. Swuste, of The Hague, Holland
Translated from the Dutch by E. J. Labarre of Amsterdam

## MENDELISM AND HYBRIDIZATION IN THE GENUS LITHOPS

About the year 1865 Mendel made certain observations and propounded a theory regarding heredity of which we shall give a few examples in connection with the hybridization of the genus Lithops.

If, as a known example, we cross *Urtica pilulifera* which we will call A, and *Urtica dodartii* which we will call B, the former having dentate leaves and the latter smooth edges, then we shall see that these parents in the first generation only produce dentate leaves, in other words although a cross or hybrid, this first generation is entirely A. In the second generation the reproductive cells or gametes will produce plants consisting of 25 percent A and 25 percent B and 50 percent AB. In the third generation A and B remain constant while the descendants of the hybrids AB further "mendelize."

Another example is a red-flowered plant crossed with a white-flowered plant of the same species will, if this is a case of intermediary hybridization, produce in the first generation a pink hybrid. On subsequent hybridization of these hybrids we get in the second generation the proportions 1:2:1. Now returning to the first case in which we cross two plants which differ in one peculiarity (unit character) and in which one of these peculiarities is dominant, we shall therefore in the first generation obtain hybrids which resemble one of the parents, viz., those which have the dominant peculiarity or character.

It must be observed here that the relation of all characteristics in all plants and animals are by no means always similar to those in the objects which were used by Mendel for his experiments, but it is frequently so and Mendel has by his studies laid a basis for the general laws of heredity.

When hybridizing, certain hereditary changes of organisms may occur by ways of sports or "saltatory variation" and these changes may sometimes be injurious and sometimes useful. In the first case the organism has no vitality and soon disappears. This occurs in germs which have lost the power to form chlorophyll. For several years I have experimented with the hybridization of various species of Lithops, knowing that Prof. Kurt Dinter states that in South Africa the Lithops do not tend to hybridization. First yellow flowers were fertilized with white flowers. A Lithops which has flowered but has not been fertilized always forms a seed capsule, but this does not contain seed. These capsules dry up early in the following spring whereas those which have seed only ripen much later. The fertilization of white with yellow flowers also produced empty seed capsules and in some cases the seed envelopes were present, but without any content. The fertilization of yellow with yellow or white with white flowers produced well-filled seed capsules. I found, however, that these seeds were always slightly paler in color than the true species, almost creamy-white. In all my experiments the seed germinated spontaneously although the germinating period in most cases was longer than in the case of the true species, but the result was that all seedlings were without chlorophyll, with one or two exceptions.

*Lithops terricolor* X *Lithops lesliei*, for instance, produced 170 plants from 187 seeds, only one of which possessed chlorophyll. This plant is thriving well and is even apparently of purer color and marking than *L. terricolor* from which it was produced.

Of course all the characteristics of *L. lesliei* although invisible, are present. They are "recessive." *Lithops eberlanzii* and *Lithops fulleri* produced 562 seeds, 6 of which possessed chlorophyll. Of these 6 plants, 4 had perished before the month of May and the remaining 556 seedlings (all seeds had germinated) were without chlorophyll and died after about one month. The plants obtained from *L. fulleri*, about 500, were all without chlorophyll and there are many similar cases.

*Lithops eberlanzii* and *L francisci* we consider to be true species. Neither of these plants is at all easy to cultivate and as I have not so far been able to hybridize these two species, I ask myself whether these plants are not themselves hybrids.

It is quite a different thing if two Lithops are related to each other, such as *L. kiubi-*

*sensis* and *L. schwantesi,* for the latter is the small edition of the former and they resemble each other very closely, as do also *L. karasmontana* and *L. erniana.* Mr. Rusch of Windhoek wrote me some time ago that Mr. Franz Erni had erroneously given the name *L. erniana* to this plant and that both species were identical, although he wished to wait for it to flower. This year, however, he offers seeds of both *L. karasmontana* and *L. erniana;* I have these in cultivation and both are nearly strong enough to flower, but I cannot up to the present moment see any difference.

I crossed *L. floris albis* with *L. bella.* The former is slightly darker and with more embossed ridges, the markings being darker and more striking, while the whole growth is somewhat larger. The natural habitat of these is, however, quite different and according to information received from South Africa they are two quite different plants. The seeds received and sown this year have all germinated and produce plants *with* chlorophyll and are thriving well. This is probably also the case with *L. pseudotruncatella* and others from which the forms *L. mundtii, L. pulmonuncuta* and *L. pseudotruncatella* var. *farinosa* have grown.

There is something to be said both for and against the cultivation of hybrid forms, but for me a true *Pleiospilos bolusii* is worth more than one which has assumed the aspect of a *Pleiospilos simulans* or *Punctillaria,* to which a fancy name such as *Pleiospilos dekenahi* has been given. It is quite possible that *Pl. dekanahi* has been imported as a true species from South Africa, but nature also hybridizes, in fact does so on a large scale.

It may interest some of the members of the Society to know something more about the action of chlorophyll. The plants absorb carbonic acid from the air and produce from this, with water under the influence of sunlight, and by means of chlorophyll, starch or carbohydrates. Consequently owing to the action of sunlight upon the chlorophyll granules, the carbohydrates present in the green plants are converted into grapesugar, glucose or dextrose, etc. The green portions of the plants can only assimilate carbonic acid gas and liberate oxygen in the light, but, like the animals, all the organs of higher plants absorb oxygen and give off carbonic acid gas both day and night. The carbonic acid gas assimilation by means of the chlorophyll depends on the temperature. Its highest value is reached at about 37° C. (or about 98° F.) and ceases at about 45° C. (or about 103° F.) These cardinal points are not always constant with the same plants, but it is also true that in bright warm weather the assimilation has not reached its full value because the supply of carbonic acid gas in the air is then not sufficient. Owing to the shortage or absence of iron (Ferric chloride or Ferric-phosphate) the plants will not turn green. The chlorophyll for instance will be found in the leaves in quantities of 0.6—1.2 percent of their dry weight. The chlorophyll of all plants is identical and consists of a mixture of two allied combinations of which the chemical formula is somewhat complicated, and also contain magnesium. I mention this magnesium because when this is substituted under the influence of certain substances, a certain product known as altiporyphrine is produced. The same compound is, however, also to be obtained from haemine, which proves the connection between chlorophyll and the coloring matter of the red corpuscles in our blood (Haemoglobin).

*Concluded in next issue.*

## SNAIL AND SLUG CONTROL

Member Louis J. Kruger of San Francisco says:

"I have a hint on my chest that I would like to pass on to everyone who is troubled with a common pest that we in San Francisco have been bothered with this year. I know that there are numerous remedies, but they will keep you poor and you cannot fight the pest that travels overnight from your neighbor's yard when he does not try, too, to eradicate them.

"This formula is for all who are troubled with snails and slugs. This will not hurt your plants:

"12 lbs. Bran..... 8c
1 lb. Pulverized Sugar..... 9c
1 lb. Calcium Arsenate.....35c

"14 pounds of snail poison for 52c."

## BINDING JOURNALS

No more Journals can be received for binding this year. Those who have sent in magazines for binding will receive them by the end of September.

Can anyone answer this question?

*Is there any book, publication or magazine dealing with the edibility of cactus and other succulents?* L. H. H.

## QUESTION COLUMN

*In reply to the questions of Mrs. Lulie G. Smith, Salem, Mass., the following:*

The Epiphyllum, as the name indicates, is an epiphyte, a plant living on a tree, but not a parasite. They derive their food from small particles off leafmold, etc., lodged in hollow places between branches, etc. From this we may conclude, that the soil mixture must be mostly fine, well decayed leafmold, mixed with a little clay and some coarse sand to assure proper drainage. The pot, in which the plant is growing should contain plenty of broken crocks or rock, also to help drainage. The rootsystem is quite delicate, and to further insure healthy root conditions, some fine, powdered charcoal should be mixed with the potting soil. The resting period with the Epiphyllum falls directly after the blooming period. At this time little water should be given, until the swelling of the stems show, that new growth has started. As the plants, in their natural habitat grow in pockets of other trees, they are naturally a shade loving plant. But they do like it warm, and rather moist. Like most plants in pots, they appreciate extra feeding, and as the epiphyllum is quite a fast grower, POKON will stimulate growth as well as the development of the flowers. In the case of Epiphyllum, the feeding may be continued until after the blooms have dropped. Then a rest of perhaps two months should follow.

The black spots referred to, may be insects. This could easily be determined. They may also be fungus spots, which are apt to develop when plants are not properly nourished. A fungicide will check the development of these growths, but a well fed plant is the best insurance against all pests.

Sempervivum may be raised from seed as well as from cuttings (stem-cuttings as well as leaves).

Hoping this will answer the questions, and thanking you for the opportunity to be of some service, I am,

T. C. Spruit, Encinitas.

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I was very interested in the Question Column of the Journal for August, as I have been unable to locate either *Coryphantha vivipara* or *Neobesseya missouriensis*, but have seen a fine specimen of *Coryphantha vivipara* that was collected near Pipestone, Minn. It was my intention at the very first opportunity to go to the west end of the state and see what I could find. Your answer to the Question Column indicates that the plants occur in the vicinity of Minneapolis, and I sure would appreciate it if you would advise me the locality. I have both plants, but they did not come from Minnesota. My plants have done well this summer, soon will be the problem of wintering them. A. F.

The plant may be found east of Minneapolis and is usually found on rocky projections.

G. A. F.

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Can any member give data as to the average life of some of the more commonly cultivated cacti? Presumably there is a difference between the age attaind under natural conditions and that reached in pot culture. Do the plants themselves bear any distinguishing characteristics (cf. tree rings) from which the age might be deduced?

G. R. L. P., Canada

Will some reader please answer Mr. Potter's question?

---

Here is a letter from a collector (not a member) living in New Foundland, which leads us to suspect that perhaps something is culturally wrong with this person's plants.

"I am in a great quandary as to what to do about some of my cactuses. Lately three of my Opuntias and two of my Cereuses have begun to turn yellow at the top, and gradually this yellow look extended until the plant dies. Can I do anything to stop the decay when it is first perceived? The plants are in a third story back room, and there is no heat, and we have but little sun here, many dark days, and much fog in the summer. None of my plants ever bloom, though some are four and five years old. I sprinkle them every day, and once a week water them. They are in a window where they get a half days sun when it shines. I have a nice collection, but one by one they are lately dying. My Epiphyllums do not get any larger, the joints are continually falling off, and they never bloom. I would be pleased to have you tell me what to do about it."

Will some reader please advise us how this New Foundland collector can solve his difficulties?

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Right now mail us a card with the name of a friend collector that is interested in cactus and succulents, and we will send him a sample copy of the Journal, and you will be doing a favor to the friend and you will help the Society.

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The following 16 pages are from Vol. 1. THE CACTACEAE.

# California Cacti

*By* E. M. BAXTER

## XV OPUNTIA CHLOROTICA

This species of Opuntia is probably less often seen in the wild than any other California cactus because of its choice of high mountain habitat. One must go into the mountainous parts of the eastern California deserts where roads are few and reasons for going are fewer, in order to find this yellow haired old gentleman of the cactus family.

Once seen, a fancier will never rest until a specimen is in his garden; and then he is disappointed because of its difficult rooting and slow growth. Probably the best way to be sure of a good specimen is to grow it from a seed. Fruits of the species are described as purple, but I have found them to be more red than purple. The fruit is large, an inch and a half long by about two-thirds as thick, and has many slender yellow spines on it. Joints may have six or eight fruits on them in the native state, but do not flower readily in the lower altitudes of cultivation.

Flowers are yellow, quite large, but not striking on account of the yellowness of the many spines showing on the plant. When the dark red fruits appear they more than take the place of the flower for showiness. The joints are generally nearly round, light green, but with a floury covering that causes them to take on a bluish tinge. The long yellow spines are generally several at an areole and point downward; there are also very numerous long slender bristle-like glochids in all areoles. On the trunk and oldest joints of a plant there is a dense, almost hairy, growth of two to three inch long spines that completely hides the stem.

As shown in the photograph the plant is upright, growing to six feet tall and about as broad. It is probable that only one new extension of joints is grown each year as the species is found at an altitude of 4000 feet and above where the growing season is not long nor favorable. The downward bent spines of a clear yellow color on the bluish joints are certain identification of *Opuntia chlorotica*. It has no close resemblance to any other species unless it be the spineless or red-black spined *Opuntia santa-rita* of an entirely different *Series* or grouping.

Distribution of *Opuntia chlorotica* is in Arizona, Nevada, New Mexico, Sonora, Baja California, as well as California. In California it is found as far West as the eastern edge of the mountain range to the South of 29 Palms. From there it grows in rocky canyon floors to the Colorado River, spread just about to the northern and southern limits of San Bernardino County. The finest growth I have seen is near the road between Goffs and Cima, California, a desert plateau about 4000 feet high with many small canyons and ridges scattered over it. It grows in isolated spots all through the territory outlined above.

*Opuntia curvospina,* described by Dr. David Griffiths but classed as a synonym of *Opuntia chlorotica* by Britton & Rose, is really a distinct species related to *Opuntia mojavensis* in the Phaeacanthae Series.

*Opuntia chlorotica,* growing south of 29 Palms, California. The rocky surrounding and the upright growth of the plant is characteristic of most specimens of the species. The photograph does not show the radiance of the yellow spine covering of the older joints.

## TWO NOTES ON "DE EUPHORBIO ANTIQUORUM ATQUE OFFICINARUM"

*By* Dr. Leon Croizat

Through oversight in handling the proofs two errors of detail were printed in my recent booklet "De Euphorbio antiquorum atque officinarum." The necessary corrections have been made in manuscript to the copies distributed to correspondents and to Botanic Gardens, and should be made also in the copies that find their way into the hands of the public, as follows:

(p. 99)—*Euphorbia abyssinica* must remain under the authorship of Gmelin, who announced it a few months before Raeuschel. The description of Gmelin, however, does not apply to the plants seen by Lord Bruce. It follows that the correct listing must read:

*Euphorbia abyssinica* Gmelin "quoad nomen."

(p. 109 and 127)—*Euphorbia pentagona* Haw. has not red cyathia. Its cyathia on live plants are greenish-yellow, exactly like those of *E. enneagona* Haw. (syn.: *E. heptagona* L., of Berger in Sukk. Euph, p. 93). Dried cyathia of *E. pentagona* are often found to be reddish-yellowish, and upon such material was based the statement overlooked in my booklet.

Cultivated plants of *E. pentagona* Haw. appear to be distinct from cultivated plants of *E. enneagona* Haw., this justifying the position taken by Haworth who published the two species. Should the species not be deemed sufficiently distinct the correct listing would require the following arrangement:

*Euphorbia enneagona* Haw. var. *pentagona* (Haw.)

It will be recalled that Haworth's descriptions and note emphasize the close resemblance of one species to the other, it being excluded that *E. enneagona* can be synonymous with E. *cereiformis* L. of Boissier (correctly: *E. Leviana* Croiz.). In time the publication of *E. enneagona* has precedence over that of *E. pentagona*.

It is very difficult to decide of the specific or sub-specific identity of closely related forms from cultivated material, particularly in this part of the country in which the climate does not favor the development of perfect specimens. The question will be better taken under advise where the material is available for a study involving the condition of fine differences in habit, inflorescence, *capsule and seed*.

EDITOR'S NOTE: Those who desire to secure this book may do so by sending $1.00 to I. B. Levy, 6 Fenimore Road, Scarsdale, N. Y.

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The third semi-annual meeting of the California Garden Club Federation will be held at the El Encanto Hotel in Santa Barbara, on October 19th to 21st, inclusive. An interesting program is to be provided, and there will be talks by noted speakers from different parts of the State. There will also be visits to Santa Barbara gardens, the Museum of Natural History, and the Blakesley Botanic Garden. Registrations should be made in advance, and sent to Mrs. Walter H. Duval, 19 McKevett Road, Santa Paula.

## SAN ANTONIO, TEXAS, CACTUS SOCIETY NOTES

In spite of the summer's heat, the San Antonio Cactus and Succulent Growers Club has been holding its monthly meetings regularly.

In order to make the meetings more attractive to all of our members, during the months of May, June, July, and August they were held on the cool lawns of the homes of members of the Club instead of at our regular meeting place at the old Spanish Governor's Palace. Here we serve light lunches and refreshments and inspect the various cactus collections, discuss all the different phases of cactus culture, exchange experiences, narration of trips through cactus countries, etc., and so come into a closer fellowship.

President Hargrove has already announced that, beginning with the October meeting, we should start laying our plans for the next Cactus Show in April, 1935, which he predicts will excel anything in this line previously exhibited in San Antonio.

This year's show has been a big success. Besides the large showing by amateurs and professional growers of rare imported cacti and seedlings, we had on display the most complete collection of Texas cacti ever assembled in one place. There were more than one hundred species shown.

Our secretary, L. G. McLean, until recently Junior Botanist at the local Federal field station, has been promoted to head of a station at Stillwater, Oklahoma. We miss him and his pleasant wife. The writer has been elected to serve as Secretary in his stead.

Mrs. E. A. Harris, our Vice-President, in company with Mrs. D. T. Atkinson, has started on a tour through the cactus country of the western states.

Our club endorses the suggestion to publish another Volume of Britton & Rose, as this is of vital interest to all members.

I am sorry that Mr. Frick's notes are missing from the past few issues of the JOURNAL for he always brought very interesting bits of news from different cactus clubs and individuals interested in cactus.

R. C. Bogusch, *Secretary*,
San Antonio Cactus and Succulent Growers Club.

### H. WESTON, SECRETARY

The newly appointed Society Secretary is H. Weston who succeeds Ted Hutchison. Ted resigned when he moved to San Diego. President Adams promises the life history of Mr. Weston in the October Journal. S. E. H.

# New Garden Species, II

*By* R. W. POINDEXTER

Photo by Eric Walther

PACHYPHYTUM HYBRID E. O. ORPET. Hort.

A. C. S. No. 3-411-226

*(PACHYVERIA E. O. ORPET. Hort.)

Description by Eric Walther of a plant grown by Mrs. Davidson, San Francisco.

Originator: E. O. Orpet, 1929.

Parentage: *Pachyphytum bracteosum* (seed parent) x *Echeveria flammea* ?

Stem at first short, but ultimately evident; leaves numerous, to 30 or more, crowded, ascending to spreading, to 17 cm. long and 8 cm. broad, oblanceolate, acute, thick; above shallowly concave, below concave and bluntly keeled, basal color light hellebore green overlaid with glaucous gray and edged and tinged with deep purplish vinaceous: Infl. 2 to 3, ramose paniculate, to 30 cm. tall; Peduncle to 8 mm. thick below, colored etruscan red, to testaceous above: lower bracts many, but early deciduous, spreading, elliptic obovate, acute, thick, to 4 cm. long and 16 mm. broad, colored as the leaves; Upper bracts similar but smaller; Branches 2 to 3, secund racemose, to 25 cm. long, with 12 or more fls. each, spreading ascending; Pedicels 7 to 8 mm. long, stout; Sepals very large, to 20 mm. long, appressed to somewhat spreading, deltoid to lanceolate oblong, acute, thinnish, colored light cinnamon drab to light drab,

* Note: Mr. Walther proposes to set up the new genus PACHYVERIA to include plants which are hybrids between Pachyphytum and Echeveria species. This has not yet been published, but it is anticipated soon.

glaucous, unequal; Corolla to 14 mm. long and 11 mm. in diam, at base, 13 mm. wide at mouth, color geranium pink to flesh pink at base; Segments erect, occasionally toothed at edges, thinnish, obovate acuminate, slightly keeled, deeply hollowed at base, colored light jasper red within, upper rim of cavity produced into 2 appendages surrounding filament of epipetalous stamens; Stamens unequal, 10 to 12 mm. long; Carpels short, stout, 12 mm. long, pale chalcedony yellow; Styles lettuce green below, maroon at tips; Stigmas capitate; Scales to 4 mm. broad, short, thick, truncate, transversely rhomboid.

Remarks: Of the various Pachyveria types raised and distributed by E. O. Orpet, this may be considered the best by far. Its pollen parent can only be surmised, but the leaf color and texture points toward the one indicated above. It is certainly a better garden plant than the old *Pachyphytum pachyphytoides*, even if this last may be somewhat hardier.

From *Pachyphytum bracteosum* this hybrid may be distinguished readily by its larger, broader, less glaucous leaves, its spreading inflorescence, pointed and somewhat spreading sepals, relatively longer petals with different appendages, etc.

We take pleasure in dedicating this to E. O. Orpet, whose valuable work in the horticultural field is universally recognized.

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We have already had a number of responses to the first appearance of this column in last month's issue. Descriptions of the plants in question will be published in future issues. We want to remind our members that this column is open to anyone who has an interesting new garden plant and we shall be glad to hear from you. R. W. Poindexter, 4160 Country Club Drive, Long Beach, Cal.

# Brooklyn Botanic Garden's Succulent Display

*By* HERMAN BECKER

The Cactus and Succulent collection at the Brooklyn Botanic Garden has been developed during the past two years. It is an outstanding one in its field because it includes many fine and rare species of one of our most interesting and fascinating groups of flora.

Frequent exchanges, donations and purchases of seeds have made it possible to rebuild and expand what once was a long-neglected exhibition and to create a concentrated, but typical, desert display.

A great many cactus lovers and collectors come here to check up on, and compare, our collection with their own. For a long while, the Succulent House was closed to the public because many of our best specimens continually disappeared. Now, however, the side benches, bearing the smaller plants, are protected by a wire screen, making it impossible to reach the plants. Warnings and signs are a great help too, in keeping the occasionally grasping hands of the public away from the plants.

One bench, forty feet long, is devoted only to plants from southern United States, Mexico and Africa. They are artistically planted in between rocks (Schist); sand and pebbles preventing the soil from being washed from hills and slopes. They develop a rapid and healthy growth and many of them bring forth lovely blossoms.

Beginning with the African section, there is a fine group of *Mesembryanthemum, Faucaria-Pleiospilos-Rimaria* and others. Bright pink, yellow and white flowers make them a favorite with the public. Another group has an excellent collection of *Stapelia, Huernia, Caralluma* and *Echidnopsis*. Rarer species too, such as *Hoodia, Tavaresia, Duvalia* and *Piaranthus*, are on display. One beautifully purple-spotted *Caralluma* still waits for identification.

Adjoining this group, we find several succulent members of the *Asclepias* family of which the most interesting one is the twining *Ceropegia stapeliaformis*, now in full bloom. About twenty varieties of Euphorbias conclude the African showing and the roadsign directs us to Mexico. Here we find a collection of Rainbows, Cerei, Mammillarias and fine varieties of *Opuntia*. Lack of space necessitates our exhibiting mainly the colored spined ones, but a few cylindrical and pencil-shaped forms are a very attractive addition. All of them thrive vigorously and have developed into first-class plants.

Other groups on the table include varities of Cactus seedlings, and *Haworthia, Gasteria* and *Aloe*. A special place is given to *Echeveria, Sedum, Sempervivum* and related kinds. Almost all of them have bloomed.

During the summer months most of the potted Succulents are sunk in the ground out-of-doors, so that they may receive the bene-

ficial effects of the sun. There are many grafts of the more common varieties which also flower frequently. A rather large area is given to *Aloe* and *Agave*. At the present writing, the *Agave victoriae-reginae* is in bloom. The stalk of this plant is nine feet high and bears about 300 flowers. It reached a height of six feet at the end of ten days, but it required two months to develop into the flowering stage.

Good varities of *phyllocactus (Epiphyllum)* and night-blooming Cereus bore magnificent flowers in profusion. Other plants, less frequently found in collections, are *Stapelianthus decarey* Choux, *Echeveria whitei* crested forms, *Haworthia pallida, Aloe greenii, Manfreda maculosa* and *Zephyranthes texensis*. The newly-introduced *Aloe helenae* of Madagascar has not flowered as yet although we have quite a number of specimens.

*Two Sections of the Brooklyn Botanic Garden's Display*

# Grafting

*By* E. C. Hummel

Grafting is to me a very interesting subject and I would like to set forth a few arguments in favor of the art. To graft cacti means to run the gauntlet between antique and misconceived ideas, erroneous information and the popular idea that it alters the plant from what nature intended it to be, both in form and flower.

My contention is that man has never been able to imitate nature, in a Cacti garden, even in a small way. Who could be the collector that would expect to find, in one locality, *Cephalocereus, Mammillaria, Echinopsis, Ocotillos, Agave, Neoporteria, Gymnocalycium, Lithops, Aloe, Mesembryanthemum, Euphorbia, Stapelia* and all other allied groups, plus a few palms and others too numerous to mention. Now I ask, is this not a most unnatural array, which is to be seen in any outstanding garden, Botanical as well as private.

As for the alteration of the plant, other than bringing out their latent characteristics, the only thing that would cause this, would be the forming of a chimera, or graft hybrid. As far as is known, no one has yet been fortunate enough to produce one with cacti. Considerable research has been done along this line with *Solanum* and other plants, and it is a most interesting subject. Any one interested in grafting should read the article in Britannica Encyclopaedia Vol. 5, Page 502, which gives details on chimeras.

Anyone who has been fortunate enough to see Epiphyllums in their native habitat will understand when I say words cannot paint a discriptive picture to justify them. A plant that cannot take moisture at temperature lower than thirty-eight degrees Fahrenheit cannot store material for flowering in our climate. Using stock with this ability, with an Epiphyllum cion, you have countered this handicap with such a weapon that you may expect a reoccurrence of tropical splendor.

By grafting you can give delicate plants a root system, that will enable them to show just what they would be if given a fair chance. We would not think of going to Alaska in our California attire and expect to survive the ordeals of their extremely cold winter. To bring a plant from out its adapted environment to an unfavorable one is very similar.

Nematodes are one of the greatest enemies of the Cacti enthusiast. After a few choice plants succumb to their ravages, we are very apt to lose heart, if we feel unable to combat them. It is safe to say there are very few if any collections free from them. We may well learn a lesson from the experience of France and other European countries, who at one time had their grape industry practically wiped out on account of the root mite (phylloxera )which was transmitted through American grape stock, it being a host plant, and suffered little or no injury from it. Horticulturists of France were wide awake, and used American wild grape stock for grafting the European grapes, thus saving one of their greatest industries. We may find our answer in *Cereus peruvianus, argentinensis* and their hybrids, which suffer very little even though heavily infested with nematodes.

I believe that in the near future, there will be a great demand for properly grafted plants. The central section of most cacti is a hard woody core which, if cut into and used as a part of the graft or cion, must be surrounded by tissue, as it will not be able to produce tissue itself. Most grafting failures are indirectly due to this cause. Putrefactive bacteria, which you have no reason to suspect, finds access to this dead wood by the use of unclean knives in most cases. A spot of rot the size of a pin point will throw enough septic poison into the cion to prevent growth. Of course, it may be long delayed, but in time that little rot speck will multiply until all that is left of the plant is recollections.

One should remember that grafting must be confined to plants that have a sexual compatibility (families). If this does not exist, I can see no reason to expect cellular unions. A few exceptions are claimed; I have seen photographic evidence of a *Lithops* grafted on a *Harrisia* which suggests to me that the *Lithops* is gathering its moisture from the atmosphere or sprinkling, nothing more. Cions will sometime penetrate the tissue of the stock plant with roots causing a partial decomposition of the stock and live a considerable time in this way. I suggest if you want to graft do not attempt to use Euphorbias, Lithops, Sedums, Aloes, Agaves, Echeverias, etc., on the Cacti family, to do so means disappointment and the loss of your

cions, unless you are able to reroot them.

As I have been very successful in reversion grafts, as a method of propagation, I believe it could be used to advantage by both the commercial man and the collector. My method is merely the severing of the plant midway, using the upper half or head as one cion, the lower part or bottom as another cion, placed in position with the root portion uppermost; this method takes slightly more time to commence growth. Just what takes place I cannot say, but surmise that new channels of sap supply are opened, upsetting predominate inherent characteristics, in so doing stimulating all areoles more evenly; this is not always the case, but I would say, at least seventy-five percent are cespitose. In some species that are naturally cespitose, this would be of little value, but in cases like *Echinopsis aurea* (of which I have a four headed speciman), or *Echinofossulocactus obvallatus,* which is my best producer, the cion being three quarters of an inch in diameter and one inch in height, and has up to this date produced fifteen offshoots, two of which are grafted, thirteen of grafting size remaining on the plant.

As a means of holding the cion, I find small rubber bands most satisfactory, by securing the rubbers over the spines on the stock and over the top of the cion, it is held tight long enough to make a union. You may have to use a number of rubbers, but the elasticity takes care of any shrinkage and removal is unnecessary as oxidization occurs rapidly. You can usually tell within three days if your graft has taken or not. The edges will usually raise slightly so the point of union is visible.

Crests would be much rarer if propagated any other way than grafting, and nothing adds such variety to a Cactus garden than a few nicely grafted crests. Seedlings grown three years on their own root system, will not be any larger than at one year on a good graft. I also find it very useful in the earlier identification of plants. One who necessarily collects with caution, not having a fortune for the purpose, picks up many small seedlings from imported seed. Such a size is impossible to identify, the juvenile forms being so different from mature plants. By grafting the plant, in a comparatively short time you are able to identify them and save substitution. Some months ago I bought a seedling supposed to be *Rebutia senilis,* which was a tiny globe covered with white hair. After being grafted for a very short time, the hair changed to long brown spines and it was easily identified as *Neoporteria nidus.* The white hair being a premordial characteristic of this plant.

Grafting to me seems essential to any collector who wishes to see his plants at their best, I have no motive but to give this art its due credit and believe any one would gain much pleasure as well as knowedge from its practice.

EDITOR'S NOTE: Mr. Hummel welcomes those interested to visit him at 4848 Imperial Highway, Inglewood, California.

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## FRICKS NOTES

Lest you forget, it is five years this month that our old friend and member Chas. C. Abraham of San Francisco died. Visits to the old nursery on Greenwich Street are a sad disappointment to the old timers since the master is missing. Clad in old overalls, and working among his plants, is a picture of Mr. Abraham that is cherished only by a few of the pioneers of this Society.

* * *

The first pilgrimage of the International Euphorbia Society will be made to Santa Barbara, California, during the month of October to visit what is known to be the largest specimens of *Euphorbia ingens* and *E. grandidens* in America.

* * *

Somehow, somewhere the idea has originated that a cactus dies after it has flowered. Probably this notion has crept over from Century Plants and Yuccas in which the production of flowers requires long years of preparation on the part of the plant and terminates its life. Cactus do not die after flowering.

* * *

Due to a cut in their maintenance appropriation, the Bronx Botanic Garden of New York is disposing of many duplicate plants and concentrating others into fewer houses. This move will close one of their largest greenhouses for the winter for the curtailment of heating expenses.

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